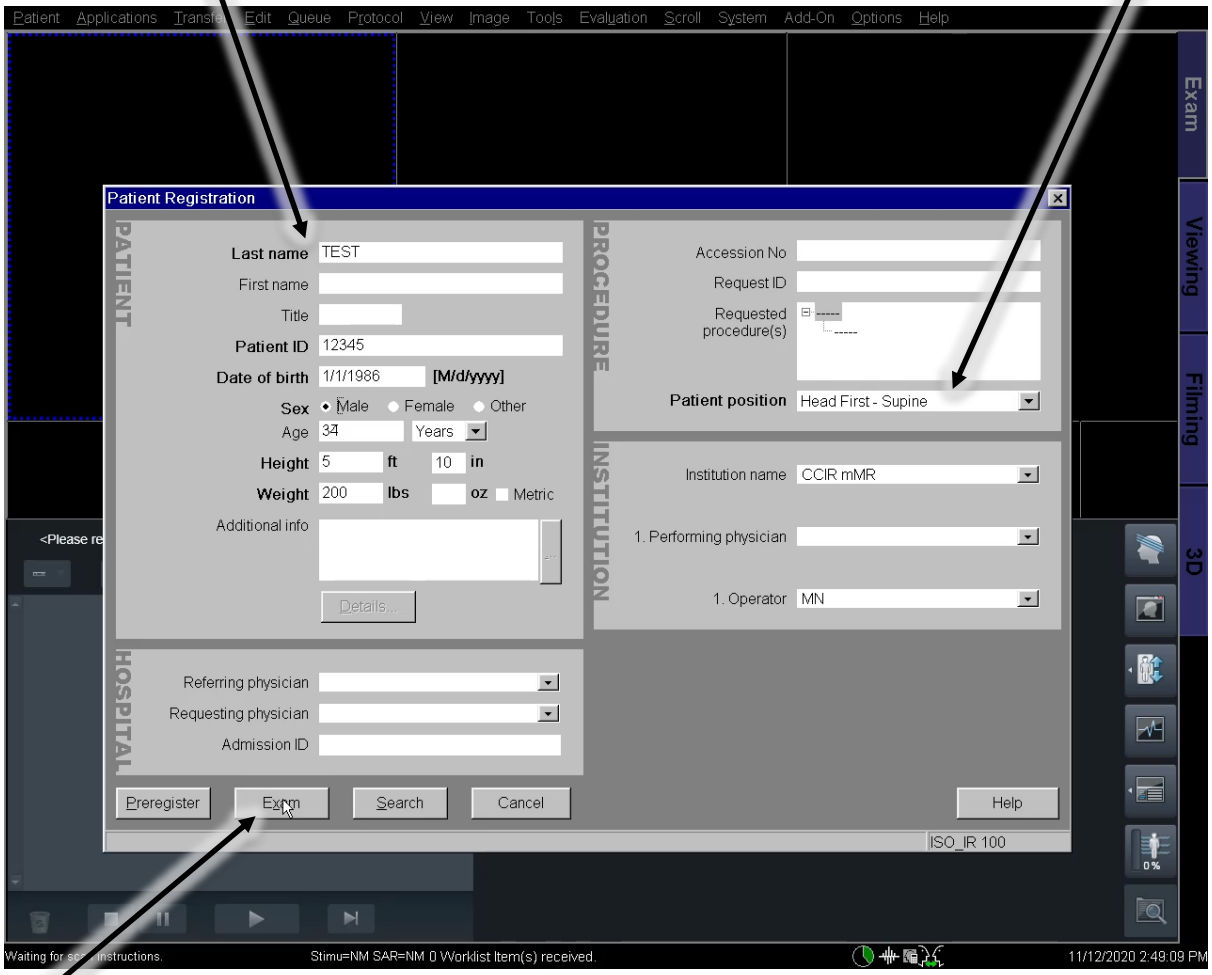
Rectal Cancer PET/MRI Staging Protocol for Siemens mMR

Step-by-step Instructions for Technologists

#1: Enter patient registration information

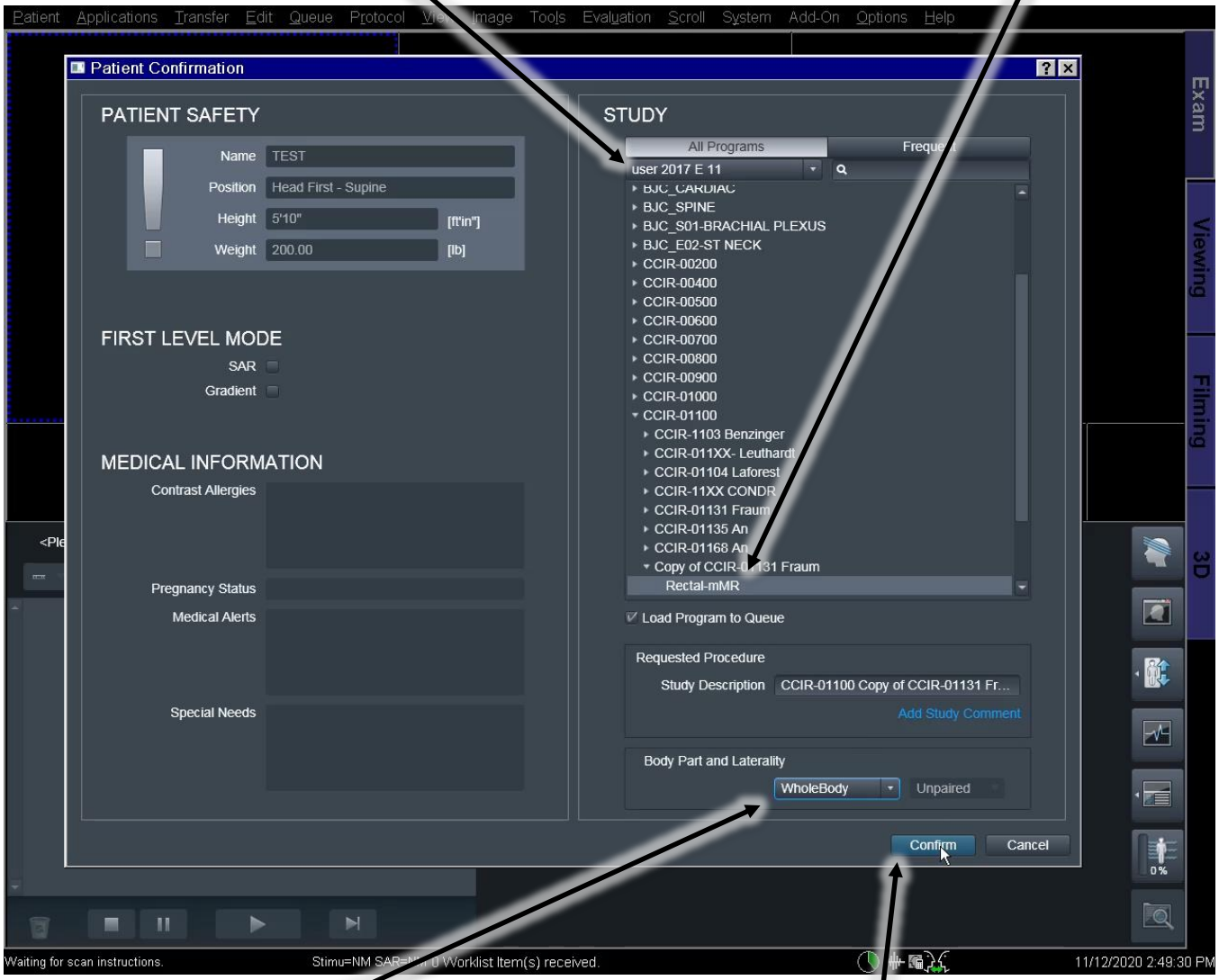
#2: Select “Head First – Supine”



#3: Click “Exam”

#4: Select appropriate user

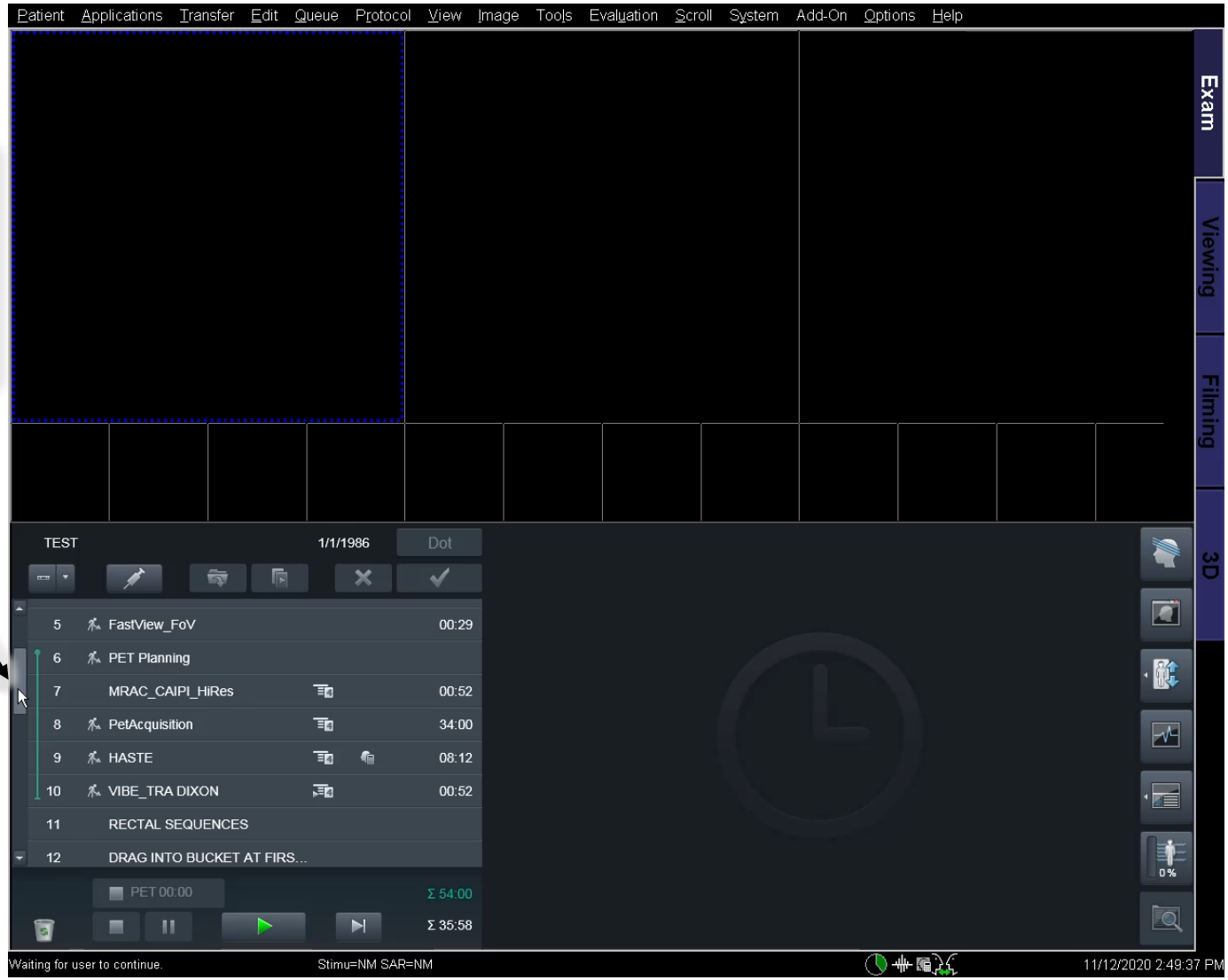
#5: Choose protocol

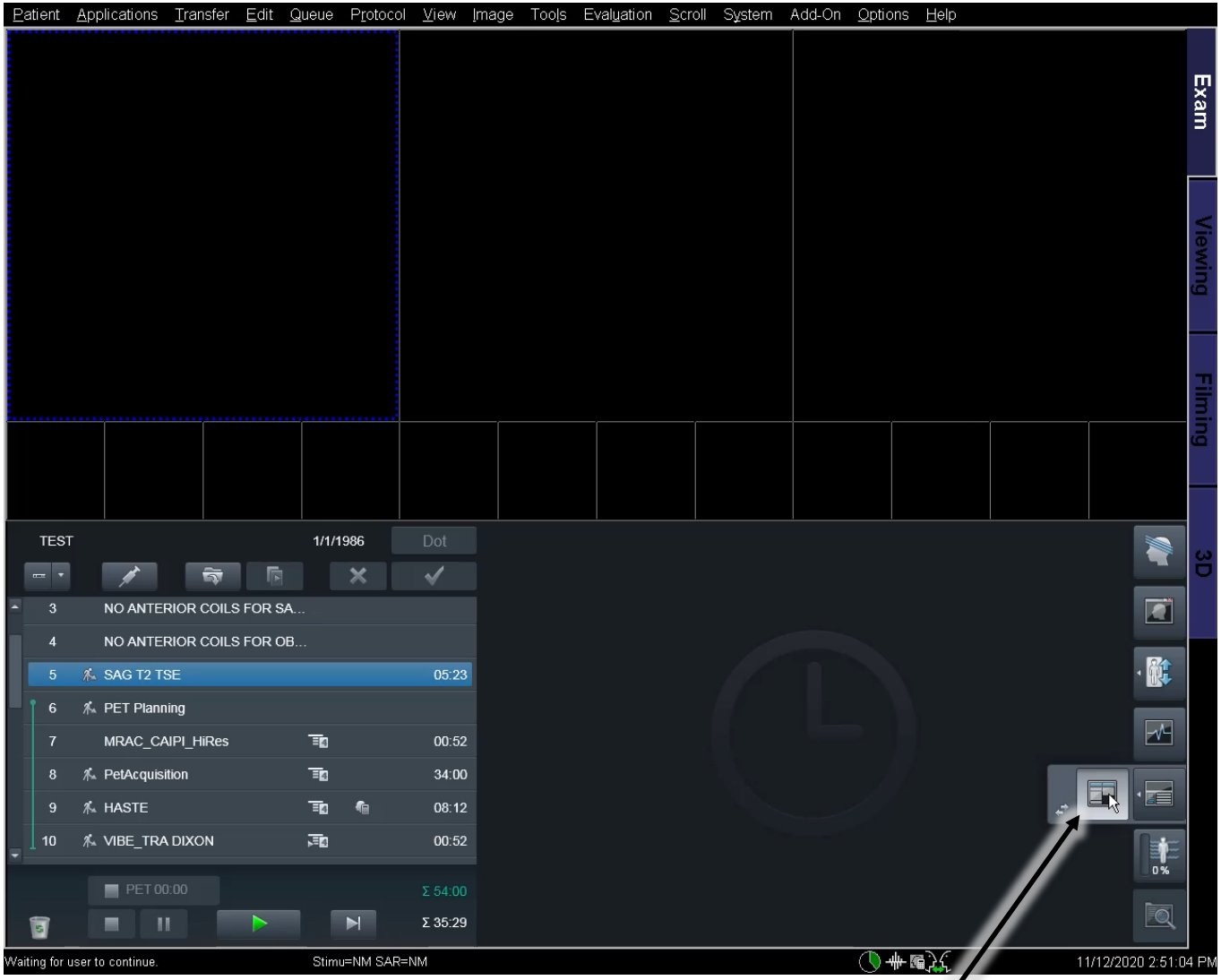


#6: Select “WholeBody”

#7: Click “Confirm”

#8: Scroll down to ensure that protocol has fully populated





#9: Click to see full protocol

#10: Utilize “Program Editor” tabs to edit or simulate potential changes to protocol

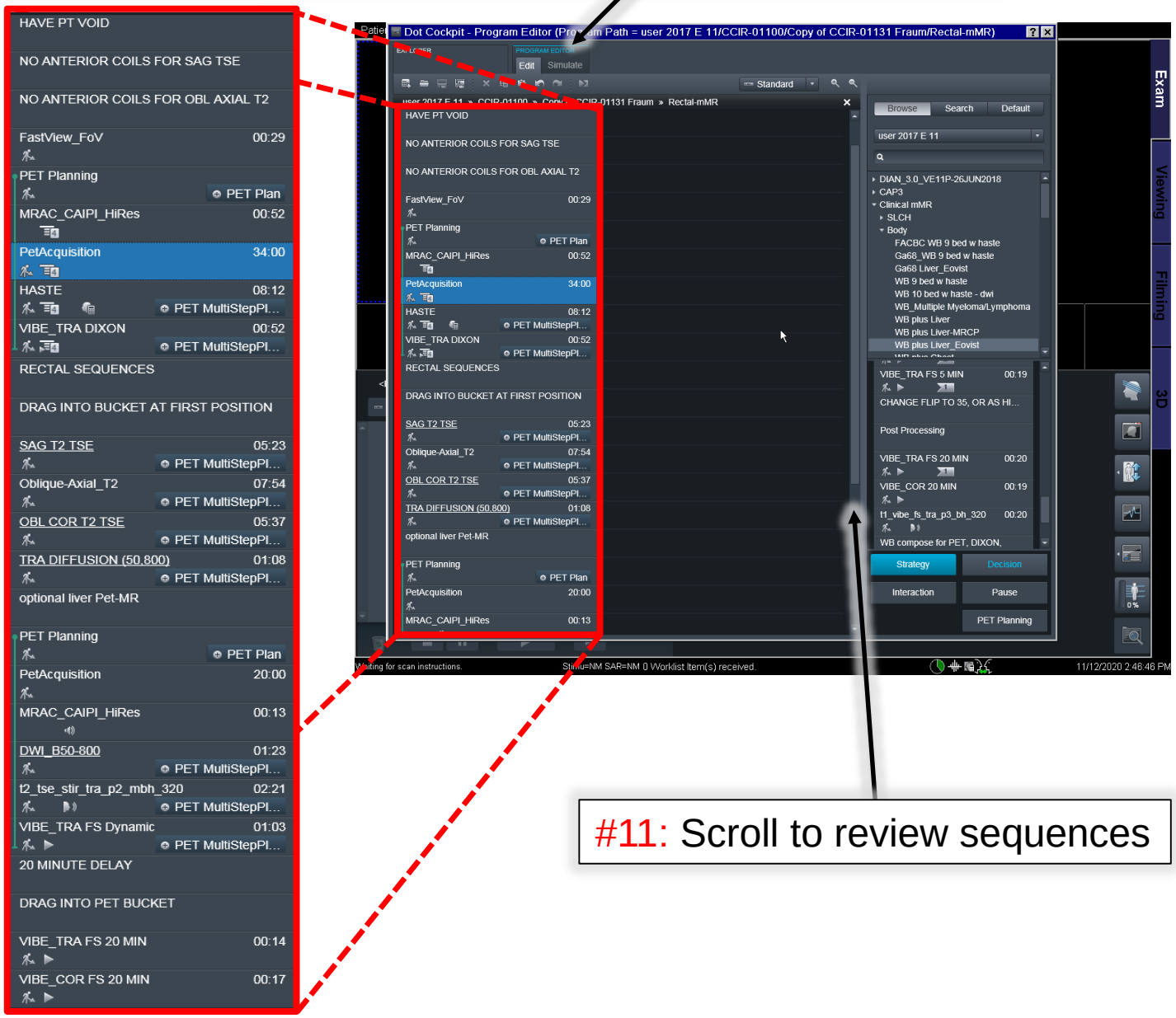
general guidelines

station set-up

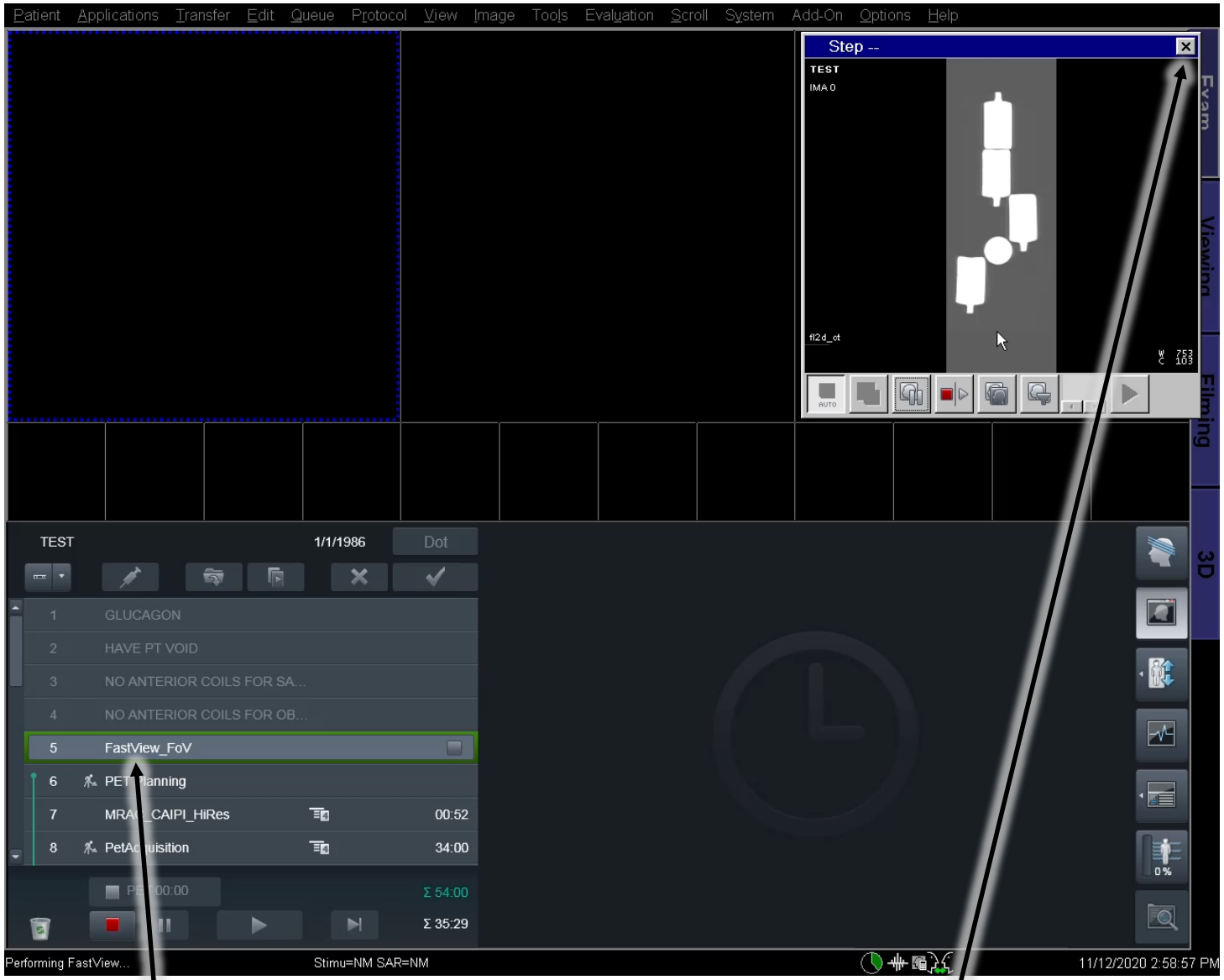
‘bucket’ of PET and MR sequences for whole body (repeated at each bed position)

dedicated pelvis MR sequences

optional dedicated liver PET and MR sequences

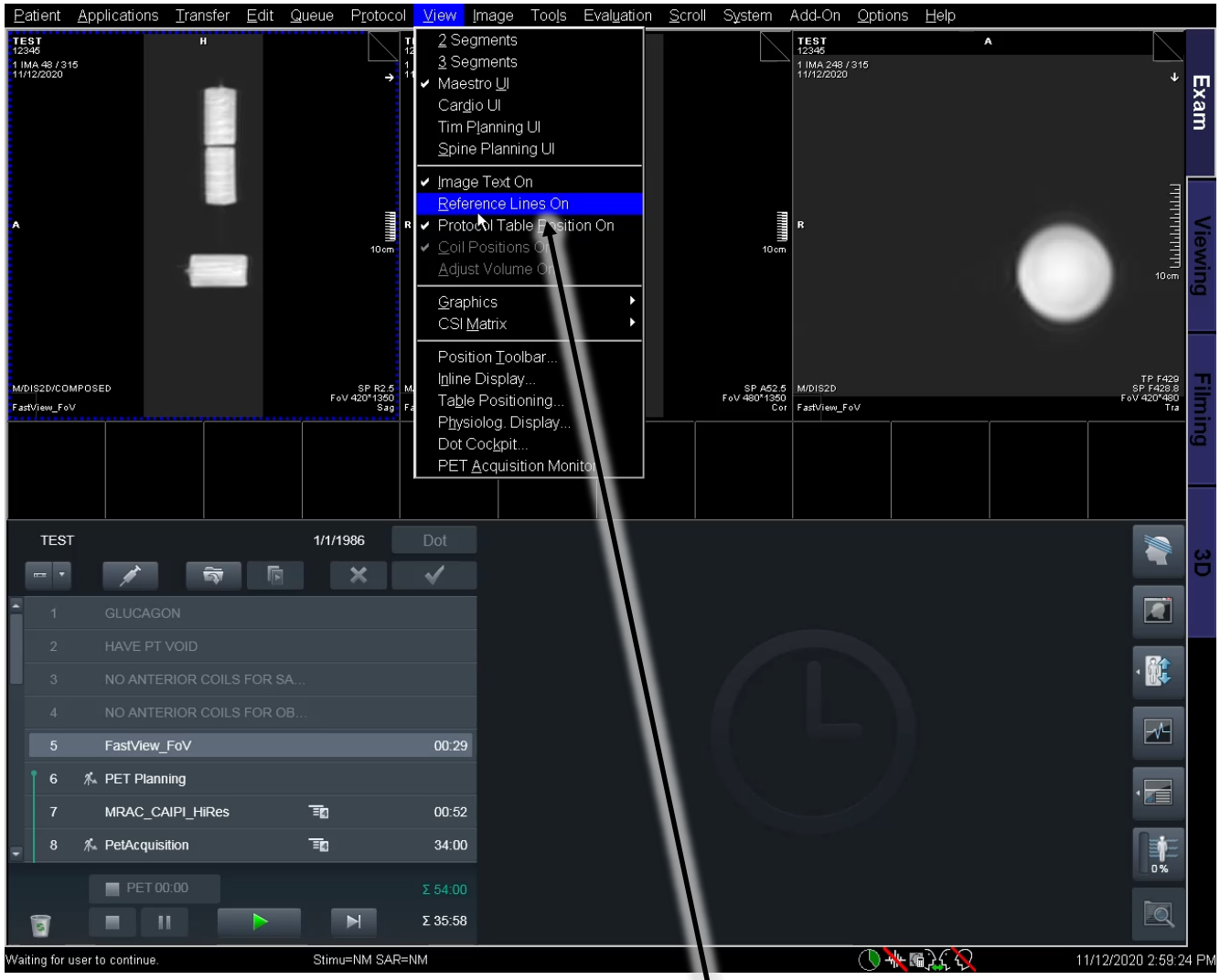


#11: Scroll to review sequences

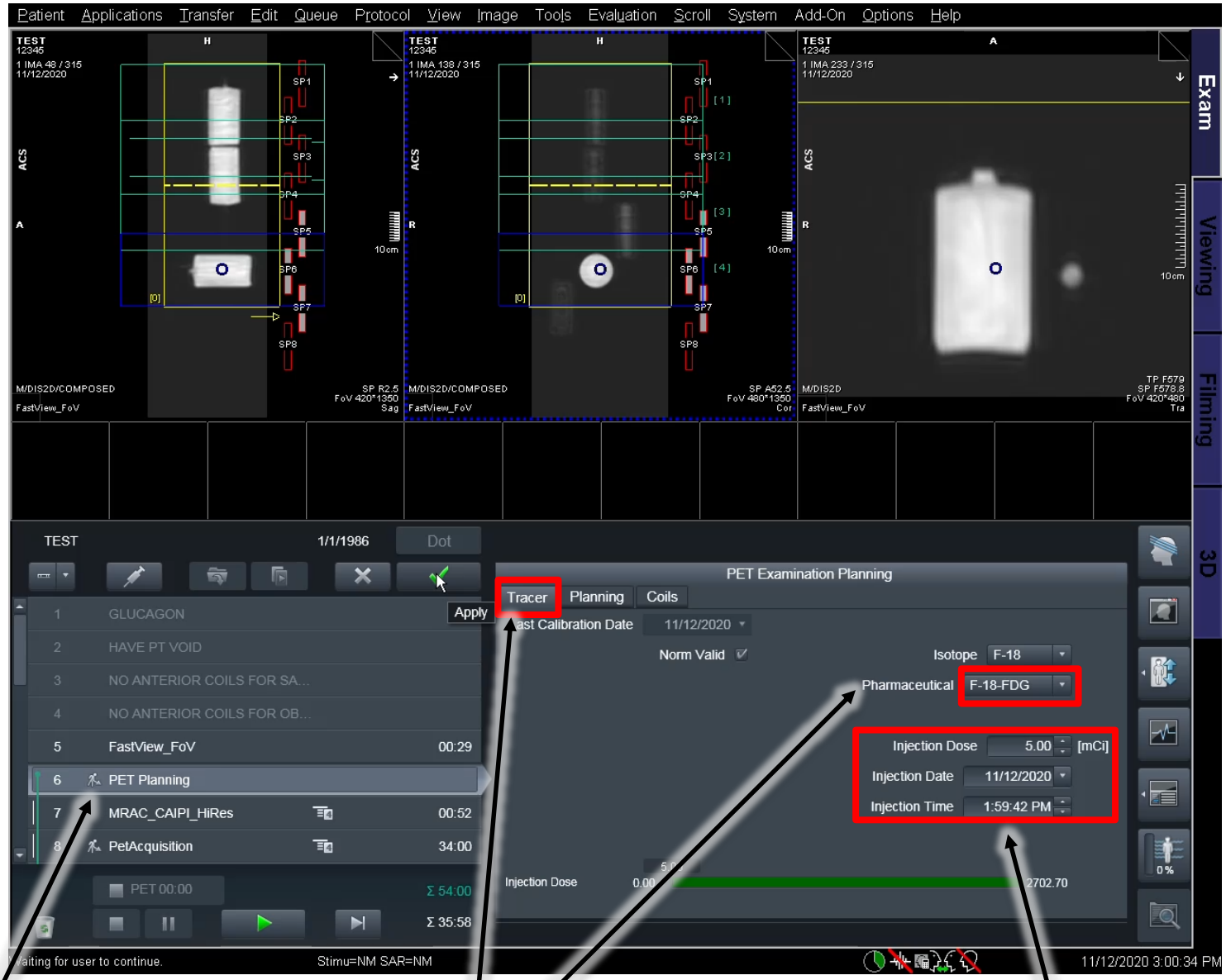


#12: Run “FastView_FoV”

#13: Close box after sequence is complete



#14: Under “View” tab, select “References Lines On”



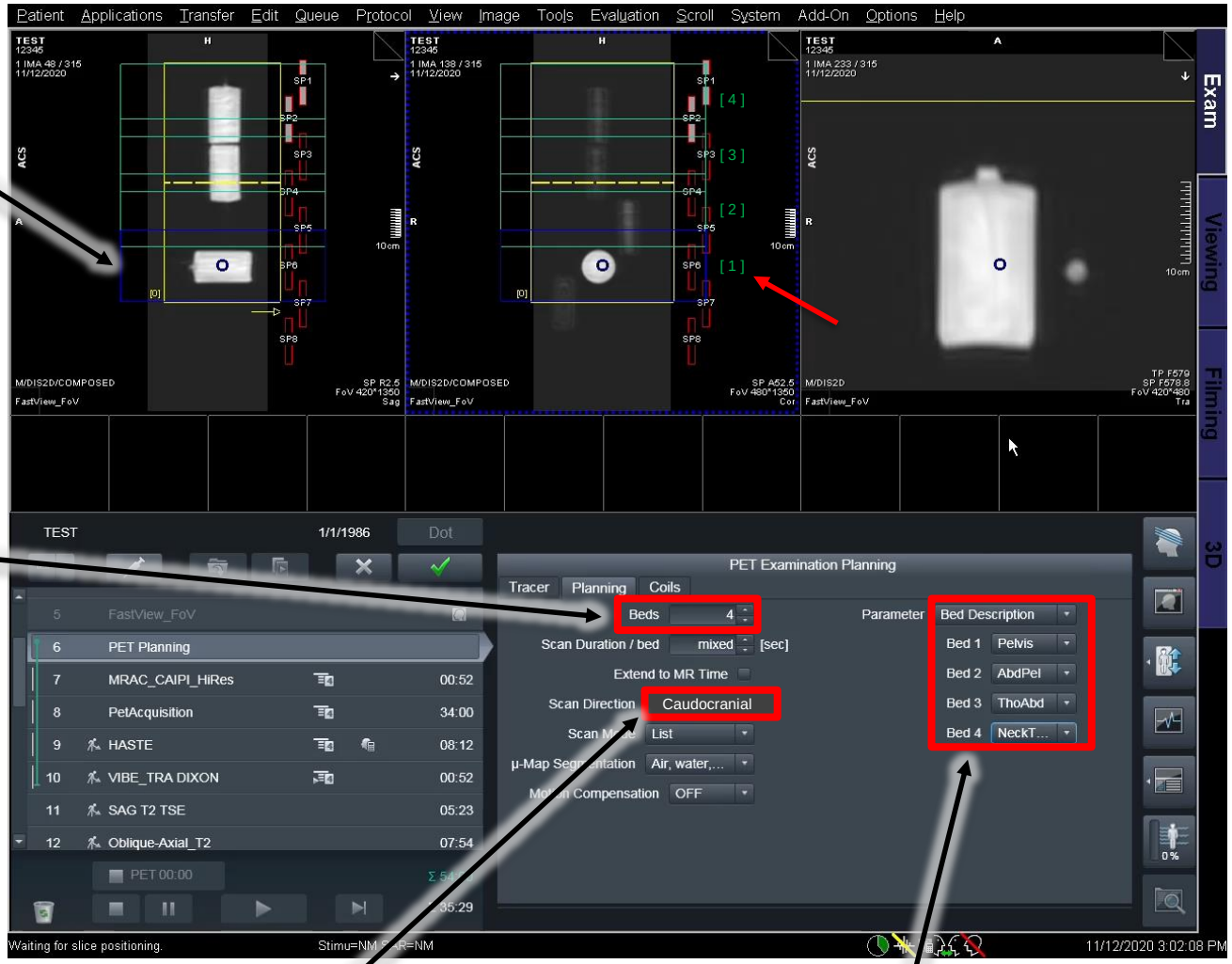
#15: Load "PET Planning"

#16: Under "Tracer" tab, ensure that F-18 FDG is selected

#17: Enter tracer injection dose, date, & time

#18: Each rectangular box (green or blue) is a PET bed position. Ensure that pelvic station (blue box) is appropriately centered on tumor

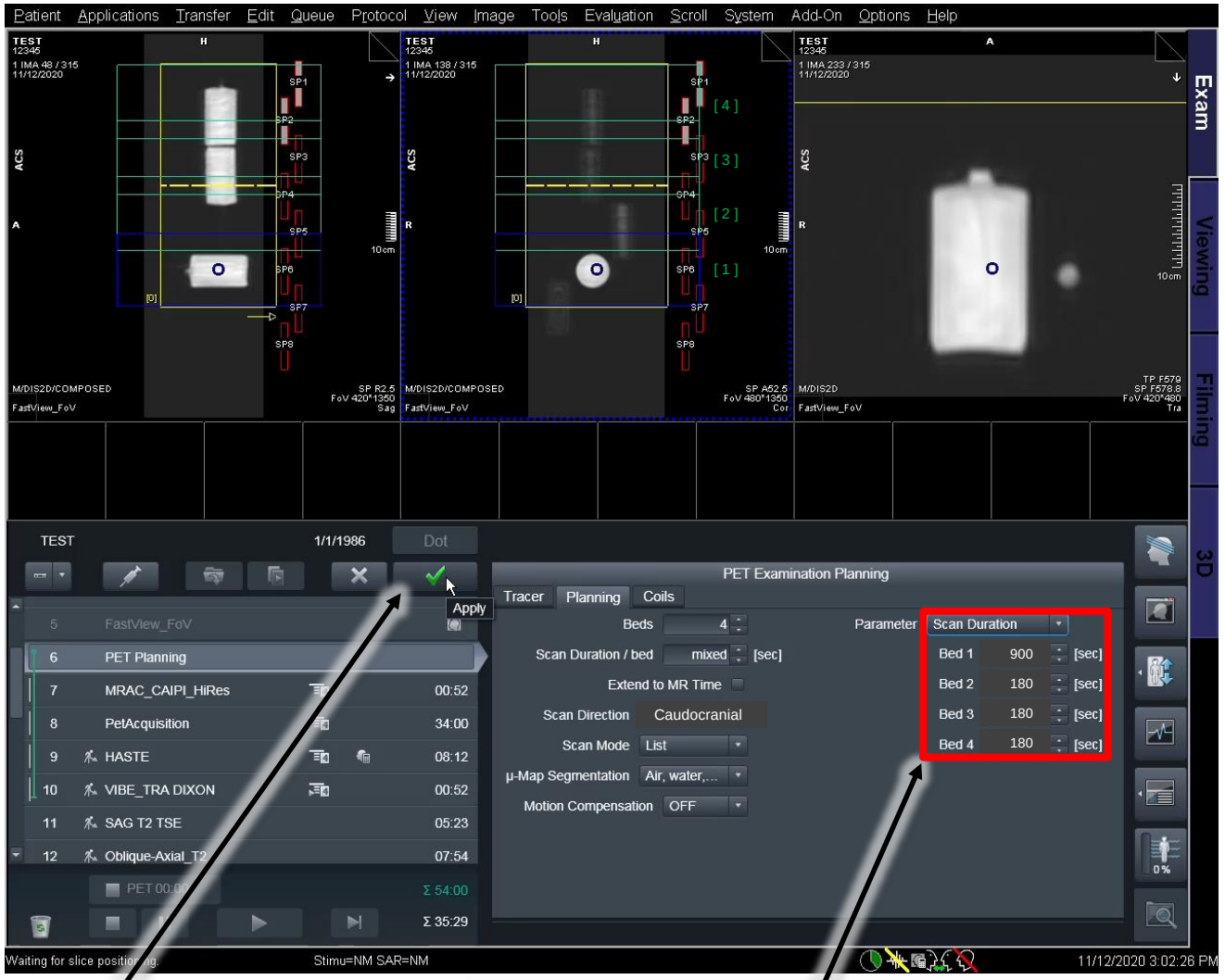
#19: Under “Planning” tab, adjust number of “Beds” if needed for appropriate z-axis coverage.



#20: Ensure “Scan Direction” is set to “Caudocranial”

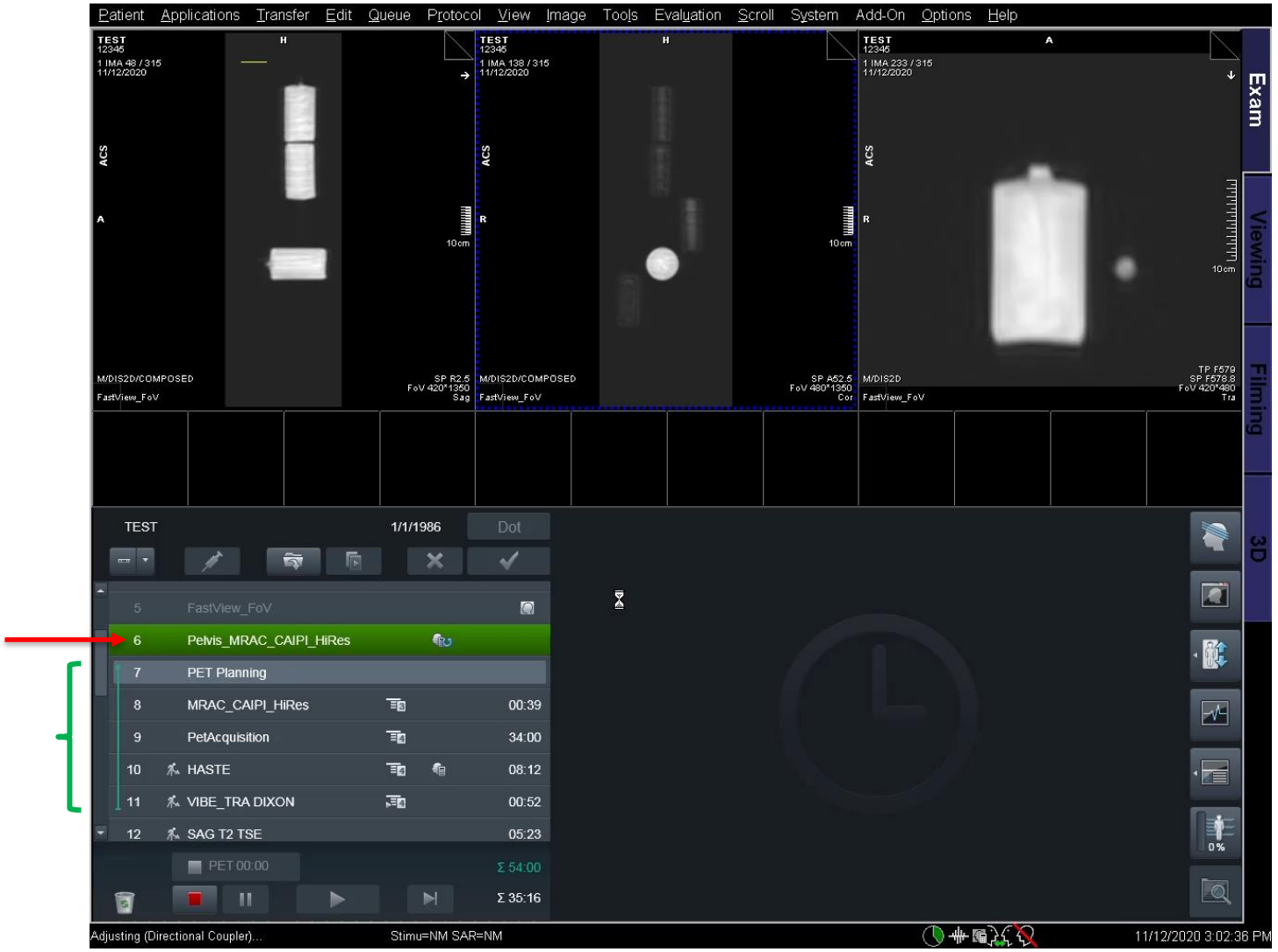
#21: Check station names under “Bed Description”; “Bed 1” should be “Pelvis” and should correspond to station [1] above (red arrow)

IMPORTANT NOTE:
The sequences with the vertical green line to their left constitute the whole body ‘bucket’. The MR sequences in this ‘bucket’ will run concurrent with the PET acquisition for each station in the whole body PET acquisition. Pelvis-specific MR sequences (e.g., high-resolution T2WIs) are not included in this ‘bucket’ as they are not run for the other PET stations. These pelvis-specific MR sequences must be ‘dropped into the bucket’ *after* the MR sequences already in the bucket have started running, as shown on subsequent slides. This allows these longer MR sequences to run concurrent with (rather than after) the extended pelvis PET acquisition to reduce scan time.



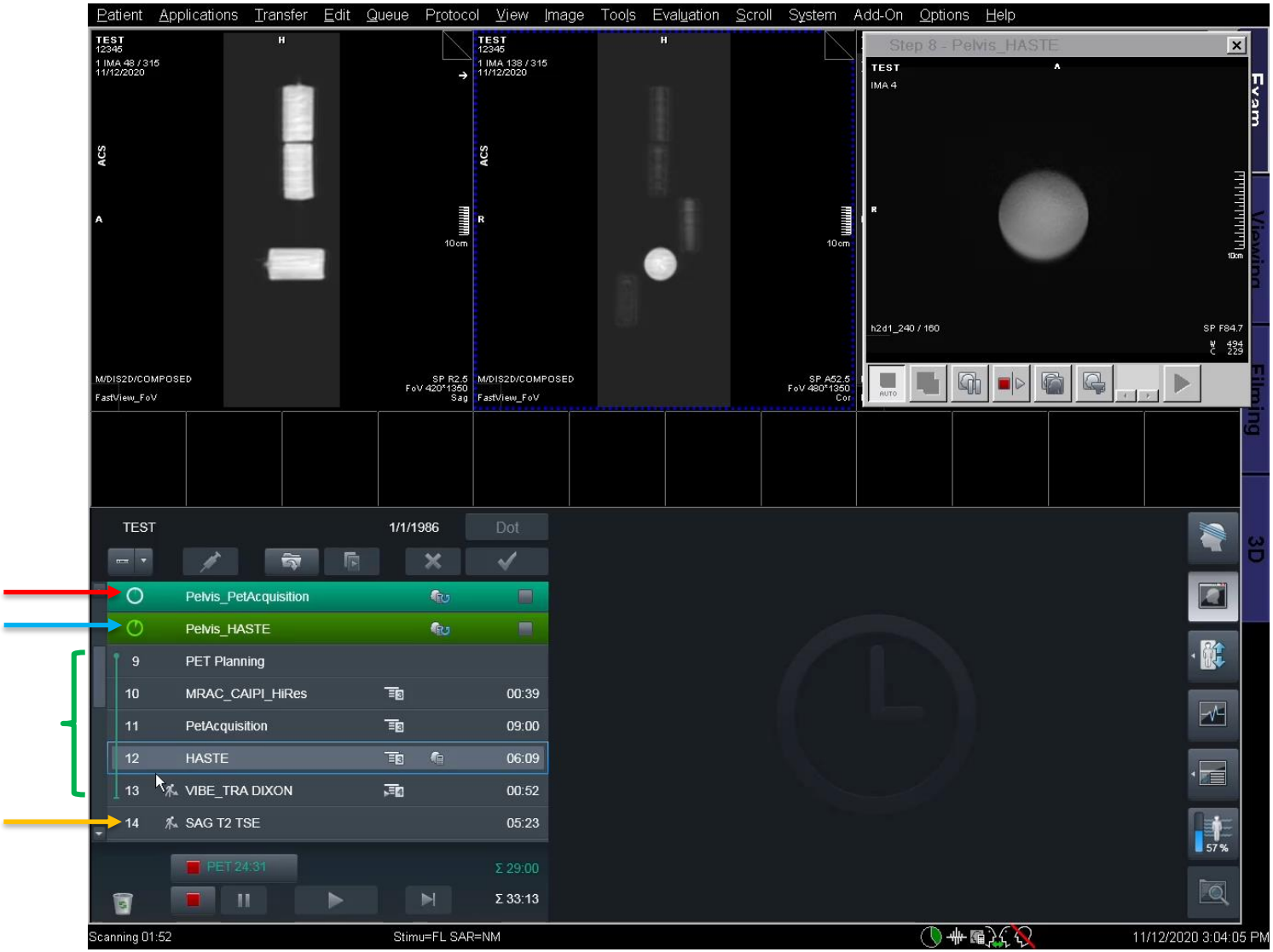
#23: Click check mark to complete PET set-up for the whole body ‘bucket’

#22: Change Parameter to “Scan Duration” and ensure that Pelvis station PET is set for 900 sec (i.e., 15 min); others should be set for 180 sec (i.e., 3 min)



IMPORTANT NOTE:
As the whole body 'bucket' (green bracket) begins running for the Pelvis PET station, the sequences contained within it will begin to appear above the 'bucket' with the label "Pelvis" at the beginning (e.g., "Pelvis_MRAC_CAIPI_HiRes" in step 6 above; red arrow).

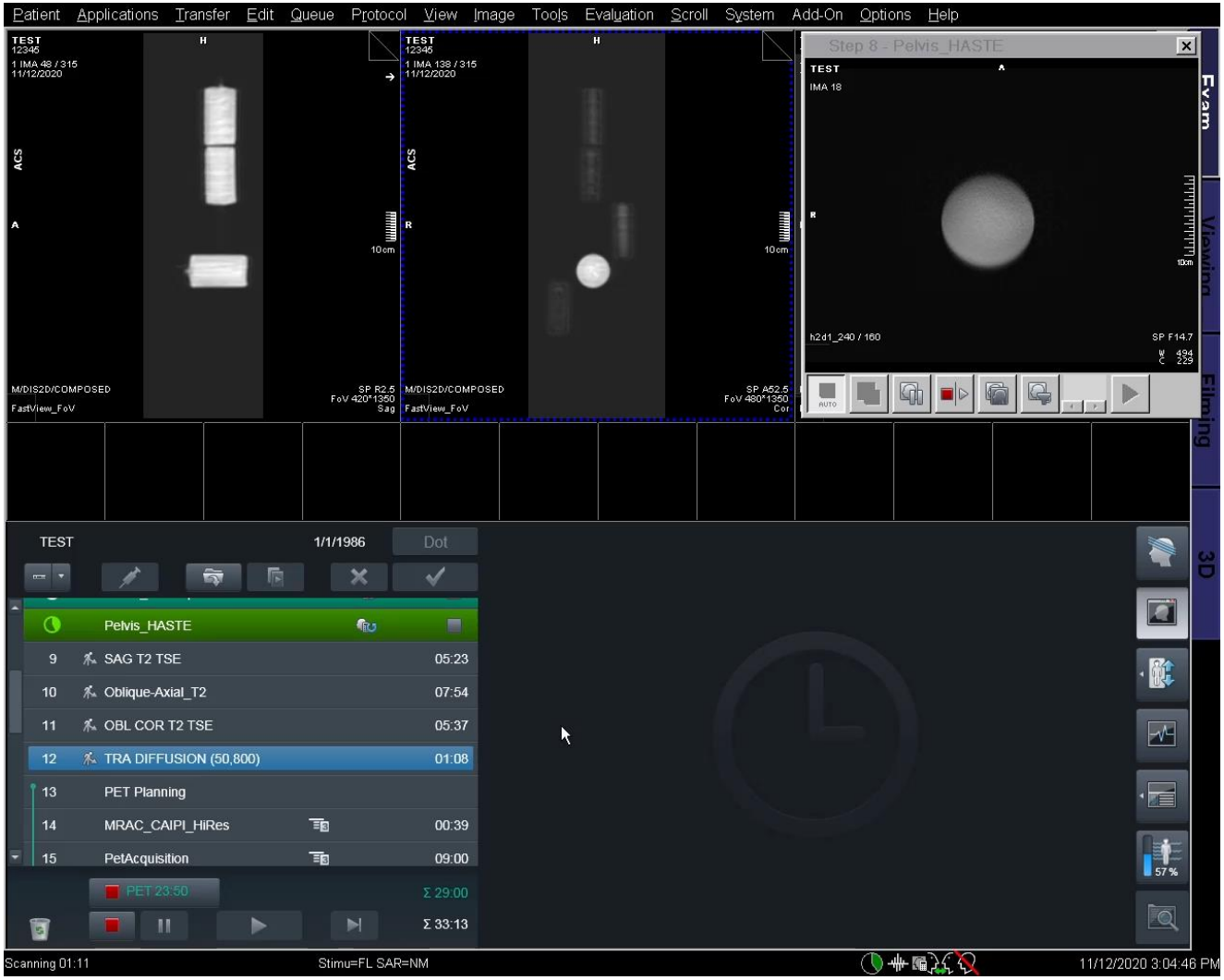
Also, each individual MR sequence inside and outside the 'bucket' needs to be set up by the technologist as for an MRI-only protocol. This can be done while preceding sequences are running.



IMPORTANT NOTE:

After completion of “Pelvis_MRAC_CAIPI_HiRes” sequence, “Pelvis_PetAcquisition” (red arrow) and “Pelvis_HASTE” (blue arrow) will next appear above the whole body ‘bucket’ (green bracket) and run simultaneously. While “Pelvis_HASTE” is running, the pelvis-specific MR sequences, such as “SAG T2 TSE” (orange arrow) and others, need to be dragged upward in the protocol and dropped between “Pelvis_HASTE” and the whole body ‘bucket’ as shown on the next slide.

#24: Drag all pelvis-specific MR sequences (orange bracket) from below the whole body ‘bucket’ to between the “Pelvis_HASTE” and the whole body ‘bucket’ (do while “Pelvis_HASTE” is running)



#25: Pelvis-specific MR sequences may need ~10 min to complete after the pelvis PET acquisition is finished. Then continue to other stations and run MR sequences concurrent with PET acquisition. If optional dedicated liver imaging is pursued, this will require setting up a separate liver ‘bucket’ as shown in #10 for the whole body ‘bucket’.